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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,541	08/17/2001	John Lacombe	1662-30500 JMH (P00-2947)	3871

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EXAMINER
COURTENAY III, ST JOHN

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 August 2001_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-31_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _16-22_ is/are allowed.

6)☒ Claim(s) _1-8,13-15 and 23-31_ is/are rejected.

7)☐ Claim(s) _9-12_ is/are objected to.

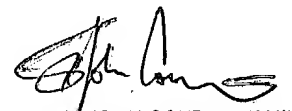8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _17 August 2001_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

ST. JOHN COURTENAY III
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

Objection to the drawings:
Figures 1 -3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 8, 13-15, 23 - 31 are rejected under 35 U.S.C. § 102(b) as being anticipated by **Mizoguchi et al.** (U.S. Patent 5,978,939).

As per independent claim 1:
Mizoguchi teaches a computer system, comprising at least one processor, a system memory coupled to said processor, at least one input/output device coupled to said processor, and a watchdog timer device, wherein the computer system executes:

- an operating system with at least two protection layers [see user layer col. 1, lines 19-24 and OS layer col. 1, line 21-24; see also the discussion of the hardware layer, the OS layer, and the user layer, col. 13, lines 15-19; see col. 8, lines 60-63, re: hardware layer];

- one or more key computer applications [see "hierarchized software programs", col. 1, line 8; see also "execution process" col. 1, line 49]; and

- an application watchdog driver that monitors user designated computer applications for periodic messages [see watchdog timer driver 22 and associated discussion, col. 13, line 15, line 64, col. 14, line 8, line 10, line 14, line 16; see "reexection requests" col. 13, line 60, i.e., functionally equivalent to the claimed "periodic messages"];

- wherein if the watchdog driver receives a periodic message from all user-designated computer applications in a predetermined period of time, the watchdog driver delivers a command to clear the watchdog timer device [see "restart the watchdog time driver 22" discussion col. 14, lines 9 – 29].

As per dependent claim 2:
Mizoguchi teaches a message passing interface that transmits signals between the two protection layers, wherein the watchdog driver executes in one protection layer and the application executes in another protection layer and wherein the periodic message is transmitted from the application to the application watchdog driver through the message passing interface [see timeout monitoring process 21 in the user layer and watchdog timer 22 and a process management subsystem 23 in the OS layer; see OS interval timer 25, col. 13, line 64; see also

"reexection requests" col. 13, line 60, i.e., functionally equivalent to the claimed "periodic messages"].

As per dependent claim 3:
Mizoguchi teaches the message passing interface is a shared memory queue [e.g., see "process schedule queues" and associated discussion col. 13, beginning line 60].

As per dependent claim 4:
Mizoguchi teaches the watchdog timer device resides in a hardware layer separate from the operating system protection layers and wherein the application watchdog driver communicates with the watchdog timer device via a hardware abstraction layer [see user layer col. 1, lines 19-24 and OS layer col. 1, line 21-24; see also the discussion of the hardware layer, the OS layer, and the user layer, col. 13, lines 15-19].

As per dependent claim 5:
Mizoguchi teaches a system watchdog timer device wherein the computer system also executes a system watchdog driver that monitors the operating system for periodic messages; and wherein if the system watchdog driver receives a periodic message from the operating system in a predetermined period of time, the system watchdog driver delivers a command to clear the system watchdog timer device [see "OS interval timer 25", col. 13, line 64].

As per dependent claim 6:
Mizoguchi teaches the watchdog timer devices issue a reset command if either of the watchdog timer devices do not receive a clear timer command from the watchdog drivers in a predetermined period of time [e.g., see function of watchdog timers discussed col. 13, beginning line 7] .

As per independent claim 7:
This claim is rejected for the same reasons detailed above in the rejection of independent claim 1, and also for the following additional reasons:

Mizoguchi teaches an application watchdog, comprising:

- a dedicated watchdog counter in the hardware layer of a computer system [e.g., see "Counter 22a" fig. 3, and associated discussion col. 13, beginning line 26; see also watchdog timer 24, col. 13, line 16] , and

- a watchdog driver [see watchdog time driver 22, col. 13, line 15] operating in the kernel mode of the computer operating system, the watchdog driver comprising:

- a system thread configured to monitor a plurality of designated user applications operating in the user mode of the computer operating system [see process management subsystem 23, col. 13, line 20];

- a message passing interface for receiving periodic signals from each of the user applications [see "reexection requests" col. 13, line 60, i.e., functionally equivalent to the claimed "periodic messages"]; and

- a communication interface for transmitting a timer reset command to the dedicated watchdog counter [see restarting the timeout monitoring process, col. 14, line 42];

- wherein if the system thread receives a message from each of the designated user applications within an allotted period of time, the watchdog driver sends a timer reset command

to the dedicated watchdog counter and wherein if the system thread does not receive a message from each of the designated user applications within the allotted period of time, the watchdog driver does not send a timer reset command to the dedicated watchdog counter [e.g., see "watchdog time" and "timeout value" and associated discussion col. 10, beginning line 43] .

As per dependent claim 8:
Mizoguchi teaches if the watchdog counter does receive a timer reset command from the watchdog driver, the counter is reset to begin counting down from the maximum allotted period of time and wherein if the watchdog counter does not receive a timer reset command from the watchdog driver, the counter is configured to restart the computer system when the counter expires [e.g., see function of watchdog timers discussed col. 13, beginning line 7].

As per dependent claim 13:
Mizoguchi teaches the messages from the designated user applications are sent periodically by the applications and directed specifically to the watchdog driver [e.g., see "user layer" and "watchdog time driver" and associated discussion col. 13, beginning line 14] .

As per dependent claim 14:
Mizoguchi teaches the plurality of the user applications are prioritized by a computer user to permit varying levels of watchdog protection [col. 1, line 50].

As per dependent claim 15:
Mizoguchi teaches the application watchdog operates in conjunction with a system watchdog that is configured to monitor the computer operating system for periodic activity; and wherein

both the application watchdog and the system watchdog are
sufficiently configured to restart the computer system if either
watchdog does not receive a timer reset command within an
allotted period of time [see timeout monitoring process 21 in the
user layer and watchdog timer 22 and a process management
subsystem 23 in the OS layer; see OS interval timer 25, col. 13,
line 64].

As per independent claim 23:
This claim is rejected for the same reasons detailed above in the
rejection of preceding independent claims 1 & 7, and also for the
following additional reasons:

Mizoguchi teaches a computer system, comprising:

- an operating system with at least two protection layers [see
  user layer col. 1, lines 19-24 and OS layer col. 1, line 21-24;
  see also the discussion of the hardware layer, the OS layer,
  and the user layer, col. 13, lines 15-19];

- one or more computer applications [see "hierarchized
  software programs", col. 1, line 8; see also "execution
  process" col. 1, line 49]; and

- at least two watchdog drivers [see OS interval timer 25, col.
  13, line 64, and watchdog timer 24 and watchdog timer
  driver 22, col. 13, discussion beginning line 15];

- wherein a first of the plurality of watchdog drivers is
  configured to monitor the operating system for periodic
  messages and a second of the plurality of watchdog drivers
  is configured to monitor the computer applications for
  periodic messages [see timeout monitoring process 21 in the
  user layer and watchdog timer 22 and a process

management subsystem 23 in the OS layer; see OS interval timer 25, col. 13, line 64]; and

- wherein if the second watchdog driver receives a periodic message from the computer applications in a predetermined period of time, the second watchdog driver delivers a command to clear the second of the plurality of watchdog timer devices [see OS interval timer 25 discussion of staring the watchdog timer driver, col. 13, beginning line 64].

As per dependent claim 24:
Mizoguchi teaches if the first watchdog driver receives a periodic message from the operating system in a predetermined period of time, the first watchdog driver delivers a command to clear the first of the plurality of watchdog timer devices [see timeout monitoring process 21 in the user layer and watchdog timer 22 and a process management subsystem 23 in the OS layer; see OS interval timer 25, col. 13, line 64; see OS interval timer 25 discussion of staring the watchdog timer driver, col. 13, beginning line 64].

As per dependent claim 25:
Mizoguchi teaches the watchdog timer devices are configured to restart the computer system if either of the watchdog timer devices do not receive a clear timer command from the watchdog drivers in a predetermined period of time [see request for reexecution, col. 1, lines 27- 32].

As per dependent claim 26:
Mizoguchi teaches the watchdog driver creates timer events in the operating system scheduler that alert the watchdog driver when the predetermined period of time has expired [e.g., see col. 4, line 21, "The watchdog timer outputs an abnormality notice when the timeout value set by the timeout value setting means at

the last stage is not set again even after a specific time has elapsed." and associated discussion].

As per independent claim 27:
This claim is rejected for the same reasons detailed above in the rejection of preceding independent claims 1, 7 & 23 and also for the following additional reasons:
Mizoguchi teaches a computer server, comprising:

- a central processing unit ("CPU") configured to execute an operating system [col. 1, line 21] and key designated user applications [the CPU is inherent in the computer system disclosed by Mizoguchi, col. 1, line 5];

- a system memory coupled to said CPU [the system memory is inherent in the computer system disclosed by Mizoguchi, col. 1, line 5];

- an input/output processor ("IOP") configured to control server management architecture [the I/O processor is inherent in the watchdog timer and monitoring system disclosed by Mizoguchi, e.g., discussion col. 14];

- a system watchdog device configured to receive periodic messages from the operating system [see watchdog timer 14 and associated discussion beginning col. 8, line 60]; and

- an application watchdog device configured to receive periodic messages from the user applications wherein if either the system watchdog device or the application watchdog device does not receive a periodic message for a designated period of time, the watchdog device that does not receive the periodic messages initiates a command to the CPU to reset the server [e.g., see "timeout value" and

"timeout notice" and associated discussion col. 10, beginning line 43] .

As per dependent claim 28:
Mizoguchi teaches the system watchdog and application watchdog may be selectably enabled or disabled independent of one another [see timeout monitoring process 21 in the user layer and watchdog timer 22 and a process management subsystem 23 in the OS layer; see OS interval timer 25, col. 13, line 64].

As per dependent claims 29 - 31:
Mizoguchi teaches the watchdog devices are selectably configured to transmit an early warning interrupt or event notification to the CPU or I/O processor before the watchdog device initiates the server reset command [col. 12, see entire timeout discussion, see e.g., "This helps spend up the sensing of timeout" line 5; see discussion, re: restarting the timeout monitoring process, col. 14, beginning line 40].

Allowable Subject Matter:
Claims 9-12 appear to be allowable over the prior art of record if rewritten to include all of the limitations of the base claim and any intervening claims, subject to the results of a final search. These claims stand objected to as being dependent upon a rejected base claim. The prior art of record does not teach nor fairly suggest the dedicated functions associated with particular bits, as claimed in dependent claim 9. Claims 10-12 depend upon dependent claim 9.

Claims 16-22 appear to be allowable over the prior art of record, subject to the results of a final search, for at least the following reasons:

As per independent claim 16:
The prior art of record does not teach nor fairly suggest a method
of <u>detecting and restarting an unresponsive computer application</u>,
including the step of where, if the system thread detects a
periodic signal from the application before the watchdog timer
counts to the final system reset value, the watchdog driver
initiates a command to the watchdog timer to reset the watchdog
timer to the initial value and wherein if the system thread fails to
detect a periodic signal from the application before the watchdog
timer counts to the final system reset value, the watchdog timer
initiates a command to restart the computer system, as claimed.

Prior Art not relied upon:
Please refer to the references listed on the attached PTO-892
which are not relied upon in the claim rejections detailed above.

How to Contact the Examiner:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to St. John Courtenay III, J.D., M.B.A., whose telephone number is 703-308-5217. A voice mail service is also available at this number. The Examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM. After Oct. 25, 2004, the Examiner's telephone number at the new Alexandria PTO location will be 571-272-3761.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, An Meng-AI who can be reached on 703-305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

All responses sent by U.S. Mail should be mailed to:

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Effective Oct. 15, 2003, ALL patent application correspondence transmitted by FAX must be directed to the new PTO central FAX number:

**NEW PTO CENTRAL FAX NUMBER:
703-872-9306**

- Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: (703) 305-3900.**

**Please direct inquiries regarding fees, paper matching, and other issues not involving the Examiner to:
Technical Center 2100 CUSTOMER SERVICE: 703 306-5631**

The Manual of Patent Examining Procedure (MPEP) is available online at:
http://www.uspto.gov/web/offices/pac/mpep/index.html

ST. JOHN COURTENAY III
PRIMARY EXAMINER